PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Art Unit	Examiner:
Applicant:	James T. Leach et al
Serial No.:	10/566,831
Filed:	August 11, 2005 (effective)
For:	**CONTROLLED SPECTRUM ULTRAVIOLET RADIATION POLLUTION CONTROL PROCESS**

Pasadena, California
February 22, 2006

SUPPLEMENTARY DISCLOSURE STATEMENT

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Examiner's attention is directed to the following patents:

U.S. Patent 6,468,489 to Chang et al discloses apparatus that comprises a NO_x reducing unit, a duct to receive a flue gas stream from said NO_x and reducing unit, and an activation source associated with the duct.

U.S. Patent 6,267,940 to Chang et al discloses a method of reducing NO_x within a gas stream and includes the step of placing a NO_x reducing catalyst within a flue gas stream. The NO_x reducing catalyst activity is enhanced by applying a separate activating source that significantly improves removal of NO_x from the flue gas stream.

U.S. Patent 6,153,159 to Engeler et al discloses thermal catalysts, particularly catalysts coated with precious metals, used to reduce the concentration of CO, HC and NO_x in exhaust gases from internal-combustion engines.

U.S. Patent 6,346,419 to Ryerson et al discloses an efficient, lightweight, and relatively inexpensive photolysis system based on use of a short-arc Hg arc lamp that provides a simple and accurate method for measurement of ambient NO_2.

U.S. Patent 6,475,350 to Palekar et al discloses an apparatus and a method for removing pollutants from gas streams using a reactor assembly. The reactor assembly includes an inlet, an outlet, at least two electrodes, a catalyst bed, and plasma generated from the electrodes. Electrical energy is applied, and catalytic surfaces enhanced by the plasma results in the reduction of NO_x to N_2 and oxidation of particulates and hydrocarbons to CO_2.

U.S. Patent 6,038,854 to Penetrante et al discloses a non-catalytic two-stage process for removal of NO_x and particulates from engine exhaust and comprises a first stage that plasma converts NO to NO_2 in the presence of O_2 and hydrocarbons, and a second stage, which preferably occurs simultaneously with the first stage, that converts NO_2 and carbon soot particles to respective environmentally benign gases that include N_2 and CO_2.

U.S. Patent 5,711,147 to Vogtlin et al discloses a non-thermal plasma gas treatment combined with selective catalytic reduction to enhance NO_x reduction in oxygen-rich vehicle engine exhausts.

U.S. Patent 6,395,238 to Rogers et al discloses an improved non-thermal plasma treatment method and apparatus for the pretreatment of nitric oxide-bearing exhaust gas with ethanol, either by vapor absorption or direct vapor injection.

U.S. Patent 6,139,694 to Rogers et al discloses an improved non-thermal plasma treatment method and apparatus that provides for the pretreatment of nitric oxide-bearing exhaust gas with ethanol, either by vapor absorption or direct vapor injection.

U.S. Patent 6,365,112 to Babko-Malyi et al discloses removal of certain contaminants from a stream of contaminant-laden commercial and industrial exhaust gases conducted through an electrostatic precipitator by passing a reagent fluid through corona discharge active zones to activate the reagent fluid as the reagent fluid is injected into the stream such that the activated reagent fluid reacts with the contaminant to be removed.

U.S. Patent 6,345,497 to Penetrante discloses a deactivated atomic nitrogen generated by an electron beam from a gas stream containing more than 99% N_2, injected at low temperatures into an engine exhaust to reduce NO_x emissions.

U.S. Patent 6,030,506 to Bittenson et al discloses a method and apparatus for delivery of exogenous non-thermal plasma activated species to a subject fluid comprising (a) creating activated species in an energizing means; and, (b) introducing said activated species into a subject fluid by high speed injection means.

U.S. Patent 6,176,078 to Balko et al discloses a highly reactive reducing gas mixture produced from vehicle fuel and introduced into the exhaust gas of an internal combustion engine operated at lean burn conditions and passed over a reducing catalyst to convert NO_x emissions to benign emissions.

U.S. Patent 6,117,403 to Alix et al discloses a process and apparatus for reducing particulate, nitrogen oxides ("NO_x"), sulfur dioxide ("SO_2"), and mercury ("Hg") emissions from the combustion exhaust of fossil fuel fired plants while producing an end product that is commercially useful.

U.S. Patent 6,773,555 to Izutsu et al discloses a flue gas treatment method and apparatus for removing sulfur oxides.

U.S. Patent 6,027,616 to Babko-Malyi discloses a method of treating industrial gases to remove contaminants.

U.S. Patent 5,154,807 to Harvey discloses a method and electrolytic catalytic cell that chemically modifies the structure of hydrocarbon fuels in which the cell is immersed, by electrochemical series potential, electrolytic cell and catalytic action of preferably a noble metal cathode and zinc anodic elements movably continually contacting and circulating the fuel, giving rise to evenness in ignition and completion of combustion with elimination of noxious by-products largely by combination with the hydroxyl ions formed by the catalytic action.

U.S. Patent 5,807,491 to Materi discloses a process and apparatus for treating an organically contaminated inorganic liquid or gas with an electron beam. The organically contaminated inorganic liquid or gas is introduced into a reaction chamber that is positioned so that the organically contaminated inorganic liquid or gas will be exposed to the electron beam.

U.S. Patent 6,811,759 to Tsuchiya et al discloses a method for producing an iron oxide pellet including the steps of adding water to a raw material mixture comprising iron oxide which serves as a primary component, a carbonaceous material in an amount sufficient for reducing the iron oxide, an organic binder in an amount sufficient for binding the iron oxide and the carbonaceous material, and an inorganic coagulant in an amount of not less than 0.05 mass % and less than 1 mass %.

U.S. Patent 6,605,263 to Alix et al discloses a process and apparatus for removing SO_2 from a gas stream having the steps of scrubbing the SO_2 with an ammonia scrubbing solution and removing any aerosols generated by the scrubbing in a wet electrostatic precipitator.

U.S. Patent 6,676,912 to Cooper et al discloses a method for removing NO_x from gas streams emanating from stationary combustion sources and manufacturing plants and utilizes the injection of hydrogen peroxide into the gas stream for rapid gas-phase oxidation of NO to NO_2 and water-soluble nitrogen acids HNO_2 and HNO_3.

U.S. Patent 6,651,637 to Oakes discloses a system for monitoring the backpressure produced by a particulate filter on an internal combustion engine.

U.S. Patent 6,523,277 to Claggett discloses an apparatus for drying and stacking treated workpieces and includes a housing defining a drying chamber.

U.S. Patent 6,743,404 to Schumacher et al discloses a reactor for the catalytic oxidation of ammonia to form nitrogen oxides which has a noble metal gauze catalyst and a heat exchanger in that order in the direction of flow.

U.S. Patent 6,612,249 to Sanders discloses a method for reducing NO_x and/or CO/CO_2 emissions from the combustion of coal products or hydrocarbons. One or more curtains of particulate elemental iron, in the form of flakes or the like, are fanned across the combustion chamber and/or the exiting flue gas stream while it is still at high temperature.

U.S. Patent 6,488,740 to Patel et al discloses an apparatus including a wet electrostatic precipitator (ESP) field disposed along a combusted fossil-fuel flue gas stream path downstream of a dry ESP field.

U.S. Patent 6,264,899 to Caren et al discloses a method and apparatus provided for reducing pollutants in the exhaust gases produced from the combustion of a fuel by introducing hydroxyl and associated radicals and oxidizers into at least one of the precombustion and postcombustion gas stream of the combustion engine upstream of the catalytic converter and treating the exhaust gases with the catalytic converter.

U.S. Patent 5,843,210 to Paranjpe et al discloses an electrostatic spray apparatus including an electrode for generating a high-voltage corona, one or more sprayers for generating a spray of liquid droplets and for directing the droplets into the high-voltage corona whereby an electrical charge is imparted to the droplets.

U.S. Patent 6,506,351 to Jain et al discloses a process for removing nitrogen oxides from gas streams such as furnace or utility boiler flue gas streams.

U.S. Patent 6,503,469 to Izumi et al discloses a polluted fluid, such as exhaust gas from a refuse incinerator, containing at least one pollutant, such as volatile organic compounds (VOCs), SO_x or NO_x, that is processed by passing the polluted fluid through an adsorbing layer containing a high-silica adsorbent capable of adsorbing both ozone and at least one pollutant to adsorb at least one pollutant on the adsorbent.

U.S. Patent 6,066,590 to Horii et al discloses a harmful gas removing agent used for removing harmful gas such as CO, NO_x, and O_3 from exhaust gases ventilated from automobile tunnels and underground parking, thereby preventing air pollution.

U.S. Patent 6,742,326 to Xu et al discloses a system and method for providing operating conditions that provide higher efficiency NO_x reduction in a lean NO_x catalyst coupled to a lean-burning internal combustion engine.

U.S. Patent 5,524,432 to Hansel discloses nitrogen oxides are removal from the exhaust of an internal combustion engine which operates on a methane-containing fuel by reacting the nitrogen oxides and oxygen in the exhaust gas with a controlled amount of methane in the presence of a reducing catalyst.

U.S. Patent 5,336,476 to Kintaichi et al discloses a process for reducing nitrogen oxides to nitrogen from exhaust gases, which involves bringing exhaust gas containing nitrogen oxides into contact with at least one catalyst from proton-type Zeolites.

U.S. Patent 6,725,643 to Paul discloses a gas turbine power generator with ultra high efficiency, the generator being an assembly of electric motor-generator machines and turbine configurations used in combination with combustor systems for operation of select integrated turbine configurations.

U.S. Patent 6,682,709 to Sudduth et al discloses gas-phase methods and systems for reducing NO_x emissions and other contaminants in exhaust gases, and industrial processes using the same.

U.S. Patent 6,224,839 to Fan et al discloses economical NO_x reduction from flue gas that is essential for the long-term profitability and existence of fossil fuel based thermal power plants.

U.S. Patent 5,744,112 to Irite et al discloses a method of cleaning an exhaust gas using an exhaust gas cleaner constituted by a first catalyst comprising a first porous inorganic oxide supporting an Ag component, a W component and a Pt component and optionally a second catalyst comprising a second porous inorganic oxide supporting a Pt component alone or in combination with a W component.

U.S. Patent 5,670,444 to Yoshida et al discloses a process in which nitrogen oxides are efficiently removed from an exhaust gas containing nitrogen oxides and an excess amount of oxygen.

U.S. Patent 6,287,111 to Gensler discloses a heating system divided into two interconnected compartments, the first having at least one burner feeder and the second having at least one receiver burner.

U.S. Patent 6,739,125 to Mulligan discloses NO_x emissions from an internal combustion engine fueled by a gaseous hydrocarbon fuel can be reduced by catalytically producing a hydrogen and carbon monoxide fuel gas stream from the gaseous hydrocarbon fuel and a portion of the hot exhaust gas from the internal combustion engine.

U.S. Patent 6,730,125 to Lin discloses a spinal fixation and retrieval device that comprises a retrieval main body, two side pieces, and a fastening device for fastening substantially symmetrically the two side pieces with two sides of the retrieval main body.

U.S. Patent 6,550,250 to Mikkelsen et al discloses a process and an apparatus for reducing the content of nitrogen oxides (NO_x) in the exhaust gases of diesel engines or turbines for stationary or mobile applications/vehicles in an SCR system by providing a stored source of liquid reducing agent and feeding the stored reducing agent to the exhaust gases.

U.S. Patent 6,146,605 to Spokoyny discloses a system developed for delivering NO_x reduction agents from a common urea feedstock, when it is appropriate to use combined NO_x treatment stages.

U.S. Patent 6,566,300 to Park et al relates to a novel titania photocatalyst and its manufacturing method.

U.S. Patent 6,562,309 to Burke et al discloses a photocatalytic device for photocatalytically treating evaporative emissions that comprises a substrate with a photocatalyst.

U.S. Patent 5,236,672 to Nunez et al discloses an apparatus and method for controlling volatile organic compounds and air toxics in a contaminated fluid flow through use of an excited species flow generated and introduced into the contaminated fluid flow to convert the contaminants into non-toxic compounds.

U.S. Patent 4,448,176 to Hoppie discloses a method of reducing ignition delay τ, of fuels to negligible values and negligible differences.

U.S. Patent 6,345,495 to Cummings discloses a gas turbine system for utilizing waste fuel gas that includes a combustor that provides combusted fuel to the expansion stage of the turbine.

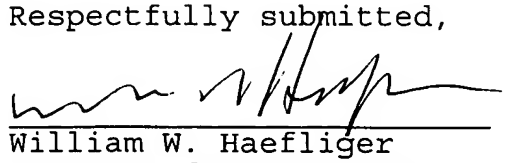
U.S. Patent 5,876,195 to Early discloses a method for enhancing fuel ignition performance by preheating the fuel with laser light at a wavelength that is absorbable by the fuel prior to ignition with a second laser.

U.S. Patent 4,885,065 to Gilgenbach discloses a process for modifying or enhancing a combustion reaction by injecting a particle beam into the combustion reaction.

U.S. Patent 5,487,266 to Brown discloses combustion in a gas turbine controlled through use of flame spectroscopy in order to achieve low NO_x emissions in the exhaust.

Copies of the above patents are enclosed. They are believed not to teach, suggest or otherwise render obvious the invention as disclosed or claimed herein.

Respectfully submitted,



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Docket 12,757

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 3

Complete if Known	
Application Number	10/566,831
Filing Date	Aug. 11, 2005 (effective)
First Named Inventor	James T. Leach et al
Art Unit	
Examiner Name	
Attorney Docket Number	12,757

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 6,468,489B1	10-22-2002	Chang et al	
		US- 6,267,940B1	07-31-2001	Chang et al	
		US- 6,153,159	11-28-2000	Engeler et al	
		US- 6,346,419B1	02-12-2002	Ryerson et al	
		US- 6,475,350B2	11-05-2002	Palekar et al	
		US- 6,083,854	03-21-2000	Penetrante et al	
		US- 5,711,147	01-27-1998	Vogtlin et al	
		US- 6,395,238B1	05-28-2002	Rogers et al	
		US- 6,139,694	10-31-2000	Rogers et al	
		US- 6,365,112B1	04-02-2002	Babko-Malyi et al	
		US- 6,345,497B1	02-12-2002	Penetrante	
		US- 6,030,506	02-29-2000	Bittenson et al	
		US- 6,176,078B1	01-23-2001	Balko et al	
		US- 6,117,403	09-12-2000	Alix et al	
		US- 6,773,555B1	08-10-2004	Izutsu et al	
		US- 6,027,616	02-22-2000	Babko-Malyi	
		US- 5,154,807	10-13-1992	Harvey	
		US- 5,807,491	09-15-1998	Materi	

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		US- 6,811,759B2	11-2-2004	Tsuchiya et al	
		US- 6,605,263B2	08-12-2003	Alix et al	
		US- 6,676,912B1	01-14-2004	Cooper et al	
		US- 6,651,638B1	11-25-2003	Oakes	
		US- 6,523,277B1	02-25-2003	Claggett	
		US- 6,743,404B1	06-01-2004	Schumacher et al	
		US- 6,612,249B2	09-02-2003	Sanders	
		US- 6,488,740B1	12-03-2002	Patel et al	
		US- 6,264,899B1	07-24-2001	Caren et al	
		US- 5,843,210	12-01-1998	Pranjpe et al	
		US- 6,506,351B1	01-14-2003	Jain et al	
		US- 6,503,469B2	01-07-2003	Izumi et al	
		US- 6,066,590	05-23-2000	Horii et al	
		US- 6,742,326B2	06-01-2004	Xu et al	
		US- 5,524,432	06-11-1996	Hansel	
		US- 5,336,476	08-09-1994	Kintaichi et al	
		US- 6,725,643	04-27-2004	Paul	
		US- 6,682,709B2	01-27-2004	Sudduth et al	

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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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		US- 5,744,112	04-28-1998	Irite et al	
		US- 5,670,444	09-23-1997	Yoshida et al	
		US- 6,287,111B1	09-11-2001	Gensler	
		US- 6,739,125B1	05-25-2004	Mulligan	
		US- 6,730,125B1	05-04-2004	Lin	
		US- 6,550,250B2	04-22=2003	Mikkelsen et al	
		US- 6,146,605	11-14-2000	Spokoyny	
		US- 6,566,300	05-20-2003	Park et al	
		US- 6,562,309B2	05-13-2003	Burke et al	
		US- 5,236,672	08-17-1993	Nunez et al	
		US- 4,448,176	05-15-1984	Hoppie	
		US- 6,345,495B1	02-12-2002	Cummings	
		US- 5,876,195	03-02-1999	Early	
		US- 4,885,065	12-05-1989	Gilgenbach	
		US- 5,487,266	01-30-1996	Brown	
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